Irrational emotions have been aroused by mere proposals to examine the properties of certain geological formations to see if they might be suitable for permanent disposal sites. Some of the depth of feeling may be based on misapprehension.[3] The process by which radioactivity placed deep in geological formations reaches the human environment is leaching by water. The water does not come up to the overlying surface immediately, but travels laterally to reach the surface some distance away—a process which dilutes substantially the radioactivity.

Dedicated environmentalists may believe that no one can ever know enough about the future to justify "disposal" of high level radioactive waste. But such anxieties are often based on grossly exaggerated fears of the dangers of radiation and radioactivity. In my opinion[4] the Royal Commission on Environmental Pollution[5] failed to complete its task and left future discussion to thrash around in an ill defined vacuum, sometimes with the suspicion that policy making on the disposal of radioactive waste is essentially dishonest. The commission concluded that "there should be no commitment to a large programme of nuclear fission power until it has been demonstrated beyond reasonable doubt that a method exists to ensure the safe containment of long lived, highly radioactive waste for the indefinite future." No one could possibly disagree. But what was not provided—and is still needed—is an acknowledged set of principles by which a judgment could be made about whether a particular option—say, for disposal of high level waste—does, or does not, meet the requirements of safe containment. This is not merely a scientific or technological problem, nor is it an issue which an independent waste disposal authority, a civil service, or even a government can settle on its own, for it is a problem of great complexity and of great public concern—just what royal commissions are meant for.

The World Health Organisation has sponsored a recent attempt (though admittedly incomplete)[6] to explain how safe containment may be defined in the context of high level radioactive waste. Its working group says (in my view correctly) that an insistence on the correct use and understanding of words with emotive connotations is not mere pedantry and it goes on to define such terms as "concern," "hazard," "probable," and "risk." The basic equation in the context of nuclear power is stated: the justification for accepting risks of exposure to ionising radiation lies in balancing them against the public health risk of not developing nuclear power, and there is considerable uncertainty in the estimation of both sets of risk. Social and economic effects must also be considered, says the World Health Organisation, but these lie outside its scope. The group agreed that some hypothetical mechanism may always be identified by which stored or disposed of radioactive waste might be unwittingly released, however unlikely this may be, which would lead to higher doses of radiation in the environment than those deemed to be acceptable. Nevertheless, this is not regarded as a barrier to making practical decisions.

Those with suspicions a priori will notice at once that the 30 odd members of the World Health Organisation working group were all without exception professionals already concerned with radioactive waste disposal and radiological protection and with more or less official addresses. This should at least guarantee the accuracy of the technical information provided and the realism of the recommendations on how to select an option for waste disposal.

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Institutional malnutrition

Hospital food, school meals, and other institutional catering share a reputation for predictable awfulness. Modernisation of facilities has in some instances led to some improvements, but both the complaints and the improvements have tended to concentrate on palatability and the variety of the menu rather than on the nutritional content.

Isaksson discussed hospital diets as a general, worldwide problem, when he stated that "rarely do physicians take responsibility for that part of the patient care, particularly if the patient does not have clear signs and symptoms of malnutrition . . . this is one of the reasons why malnutrition may develop during hospitalisation."[1] We are still reading reports such as that of long stay patients with psychiatric illness in a London hospital who had nutritional deficiency of vitamins C and D and folate—though without the appearance of clinical signs.[2]

Dietary deficiencies have to be of long standing and severe before signs appear—even in developing countries where undernutrition is obvious. Nevertheless, doctors do not have to wait for such signs before becoming concerned. Mortality is increased in undernourished compared with well nourished patients after fracture of the femur, and supplementary feeding improves the rate of recovery.[3] The same report shows, however, that the problem is not as simple as just improving the menu. Firstly, the undernourished patients arrived in that state, and, secondly, despite their being offered an adequate diet while in hospital, their intake remained only 1000 kcal (4·2 MJ) a day.

The patients most likely to become malnourished are—not surprisingly—those who are most ill. An additional problem may be the side effects of treatment with drugs. The relation between drugs and nutrients is complex—foods may influence the effectiveness of drugs and interactions may cause harmful side effects, especially in the elderly.[4] Another problem is that people differ in their nutritional needs. Tables of recommended intakes of nutrients do not apply to individuals, so that it is difficult to be certain that their diet satisfies their requirements.

Thus illness, drug treatment, poor appetite, and the possibility of monotonous menus and unattractive food may all help to explain a report from the United States that half of all hospital patients are suffering from some degree of malnutrition—and that between 5% and 10% literally die of starvation.[5]

Two recommendations can be made. Firstly, more attention should be given to nutrition in medical education so that doctors can understand these problems better.[6] Secondly, the nutrient content of institutional diets (and indeed of all diets) should be improved so far as is practicable and palatable. Since we cannot be certain that every patient is meeting his nutritional needs, we might attempt to improve all diets. This can be done partly by better selection of foods and dishes and

ringing the changes. We have become accustomed to describing table sugar as "empty calories," but if we include fats (largely empty calories) and alcohol then we are, on average, relying on one third of our food to supply all our nutrients. Palatable meals can be devised from foods which provide protein, fibre, and vitamins as well as energy.

If patients in hospital eat poorly then the likelihood of meeting their enhanced needs is remote even with modernised catering facilities. There is more to good nutrition than a good kitchen. Clinicians need to recognise that they have a responsibility for the nutritional care of their patients, and the question "what did you eat today?" should be included in the houseman's daily round.

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Not . . . achalasia

Achalasia is a rare disease; disorders which imitate it are even less common, with the exception of Chagas's disease, which should not be overlooked easily if the patient is questioned about travel to South America. Achalasia may be imitated, however, by a neoplastic tumour in or close to the lower oesophagus—a syndrome first described over 60 years ago and long known as a diagnostic trap for the unwary clinician or radiologist. The term "secondary achalasia," sometimes used, is misleading as the mechanism may be different from the presumed neural abnormalities which cause true achalasia. If eponyms were fashionable it might be called Howarth's syndrome.

Most cases are due to adenocarcinoma of the cardia,[1-4] for when a carcinoma encircles and narrows the oesophageal outlet the radiological appearances are like those of achalasia, since such a constriction rapidly abolishes oesophageal peristalsis, which is replaced by "spasm"—as shown by Kelley in man[5] and by our unpublished studies in monkeys. In some case reports, however, the adenocarcinoma did not completely encircle the cardia, and this was usually the case when other malignant tumours were responsible; these other lesions included bronchial carcinoma,[4 6] reticulum cell sarcoma,[7] gastric lymphoma,[8] and pancreatic carcinoma.[4] In all such cases the primary or metastatic growths were close to the distal oesophagus. When the histological appearances have been reported Auerbach's plexus has been infiltrated by tumour,[3 9-11] sometimes localised to a short segment close to the gastro-oesophageal junction.[12] This adds some weight to the belief that true achalasia may also begin with neural abnormalities localised to the cardia, the motor changes in the body of the oesophagus being secondary.

Benjamin *et al* reported two patients with widespread lymphoma (including spread to the central nervous system) with dysphagia due to oesophageal motor abnormalities, though not simulating achalasia.[13] They speculated that the abnormality in motility might originate in the central nervous system but produced no anatomical proof that the oesophagus itself was not directly affected.

Awareness of this unusual abnormality is important because it is so easy to believe that a patient has true achalasia—the rarity of that condition bemusing the unwary diagnostician. Tucker *et al* reported that patients with "secondary achalasia" tend to be over 50, with appreciable loss of weight and dysphagia for less than a year[4]; but this is not always so,[7] and such a history occurs quite often in true achalasia.[14] These features should, however, always put the clinician on his guard. The radiologist may find a smoothly tapered narrowing of the cardia, sometimes with dilatation of the body of the oesophagus; and, though with care he may see distortion of the fundus or rigidity of the narrow segment,[3] especially if cine radiographs are studied, the appearance may be indistinguishable from true achalasia, even on review.

Endoscopy is obligatory in any patient with dysphagia, and this is just as true when the radiological diagnosis of achalasia seems obvious. If there is dilatation and retention of food daily washouts of the oesophagus and a diet of clear fluid only may be necessary for two or three days if an adequate view is to be obtained. In achalasia the cardia opens to firm pressure by the endoscope, the mucosa is smooth, and the gastric fundus is normal when an inversion view is obtained. Yet Tucker *et al* showed that carcinoma of the stomach may be overlooked, even when specimens are taken for histological and cytological examination,[4] and extrinsic carcinomas may be even harder to detect. It might be thought that intraluminal manometry—the touchstone of the oesophagologist—would be the most accurate arbiter, but in reported cases the findings (aperistalsis and a high pressure, poorly relaxing sphincter) have been identical with those in true achalasia. It is more clinically gratifying than it is physiologically surprising that oesophageal function may return to normal when the neoplasm is removed or treated by radiotherapy or chemotherapy, and the patient will be given useful symptomatic improvement even when the lesion is itself incurable.[5 7 8 15]

Until recently almost all achalasia was treated surgically in Britain, so that differentiation of true achalasia from a tumour of the cardia was less important since the true state of affairs would inevitably be discovered at operation. Now that achalasia is increasingly being treated by forceful pneumatic dilatation, accuracy of diagnosis has become of greater importance. If there is doubt, then operative treatment should probably be recommended: if dilatation is inadvertently attempted a tumour at the cardia may be manifested by its lack of distensibility, the bag failing to reach its proper inflated outline under full pressure when viewed radiologically.

An uncommon mimic of a rare disease will not tease a clinician with any frequency, but those who deal with the oesophagus should be alive to the problem and make certain that their diagnostic approach ensures the minimum possibility of error.

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